BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An Open Forum for brief discussions of the workaday problems of the bedside doctor. Suggestions of subjects for discussions invited.

CARCINOMA OF THE CERVIX OF THE UTERUS

ETIOLOGY OF CANCER OF THE CERVIX

ORVILLE N. MELAND, M. D. (1407 South Hope Street, Los Angeles).—Ordinarily, when we think of cancer of the cervix, we immediately attribute this condition to neglected lacerations following childbirth or the acrid discharges secondary to low-grade infections. There is much to commend this viewpoint, as has been brought out by Bailey and Schiller, but many women who have lacerated cervices and chronic inflammations never develop cancer. However, in a very fine piece of work Bailey[1] shows that in the chronic inflammatory lesions of the cervix, and in the so-called erosions, there is a dual process going on, a chronic destructive inflammation and an abortive healing attempt with epitheliation. In some patients, when the reparative process is interfered with, a condition is finally arrived at where the epithelial cell is no longer a healthy organism with function, but one in which the growth element has become such a dominant factor that a new growth results. The balance between growth and repair has become lost and a cancer is born. Such an evolutional process has been traced in serial sections of cervical erosions where he says, "The ultimate sequel to erosion is malignancy." Bell, on the other hand, makes the pertinent remark: "Erosions and lacerations of the cervix furnish a theoretical point of origin for cancer, but the earliest cancers we have studied did not arise from these lesions. We have no certain knowledge of the inciting causes of cancer of the cervix."

However, there are other factors which we must consider. Thus Martzloff[2] maintains that the majority of instances of cervical cancer are associated with one or more pregnancies. What influence the pregnancy actually has is hard to say, but most observers think that the healed laceration following childbirth, miscarriage or operative manipulation may supply the primordium for cancer of the cervix. Sir George Buchanan, a member of the Cancer Commission of the League of Nations, says: "Although cancer of the cervix is mainly a disease of women who have borne children, the work of the Commission confirmed the conclusion of Peller and Deelman that it is *the fact of a pregnancy,* and not the number of deliveries, which is the predisposing factor in the production of cancer of the uterus."

The influence of pregnancy in this condition is strengthened by some observations made by Hofbauer,[3] who has found hyperplastic changes in the cervical epithelium in a notable proportion of pregnant uteri. Furthermore, there are ingrowths of the epithelium with hyperchromatism of the cells. He says: "The generation during pregnancy of multilayered cells, by proliferating cervical epithelium, might be properly designated as epithelial hyperplasia, exhibiting certain features of 'metaplasia.'" This hyperplasia persists as long as forty days postpartum, possibly longer. The cells in this proliferative process resemble morphologically the epithelial neoplasia of Cheatle, as seen in chronic cystic mastitis. The same process has been seen in the gall-bladder by King, and in polyps of the colon by Schmieden and Ewing. To quote Hofbauer again: "Reasoning by anology, however, with similar phenomena in the gall-bladder, the breast and the alimentary tract on record, I venture to suggest that the production during pregnancy of solid tongues of proliferating epithelial cells in discrete places of the cervical mucosa, whatever their fate, may represent an important link in the chain of causative factors for the later development of malignancy; leaving unanswered the question of the interrelation of such epithelial variations and sequential chronic inflammatory conditions."

How are we to explain the presence of cancer of the cervix in the virgin? This group represents 5 per cent of those seen. Here we have no pregnancy, nor any laceration incident to manipulation. Are we to attribute it to the "Congenital Type of Erosion" of Reel? Irritation alone is not the cause of cancer. How many women with complete or partial uterine prolapse develop cervical cancer? If the cervix is irritated it should be under these conditions. Turning to the realm of speculative possibilities, the virgin who develops cancer must belong to a susceptible class. She has inherited a definite tendency toward that disease, and when an irritant is present, whether it be a "congenital erosion" or a hormonal derangement, neoplasia takes place.

Welsh,[4] in speaking of heredity, says: "In regard to the direct influence of heredity on the development of cancer, there is evidence that mice and men are linked in a fraternity. Both mice and men may show strains that are relatively susceptible, and strains that are relatively immune to cancer. Fortunate indeed are they who belong to the latter class. And to those who belong to the former class, that is, to those who have a family history of cancer, I would say that fore-

1 Bailey, K. V.: An Inquiry into the Basic Cause and Nature of Cervical Cancer, S., G. & O., 50:513, 1930.

2 Martzloff, K. H.: Lewis' Practice of Surgery, 10:176.

3 Hofbauer, J.: Epithelial Proliferation in the Cervix Uteri During Pregnancy, and Its Clinical Implications, Am. J. Obst. & Gynec., 25:779 (June), 1933.

4 Welsh, D. A.: Chapters in the Life History of Cancer, Med. J. Australia, p. 540 (April), 1930.

warned is forearmed. It is one of the prerogatives of intellect to be able to turn what at first appears to be a menace into a weapon of defense against that menace. If we accept the fact that heredity plays a part in the genesis of most cancers, then we should be in a better position to prevent death from cancer, because our attention would be focused upon their early and curable stages when an hereditary predisposition is known to be present, and further, we should concentrate upon prevention in such cases by removing all possible existing causes."

To summarize then, there is no uniformity of opinion as to the exact etiological factors in carcinoma of the cervix. Neglected lacerations, chronic inflammatory processes termed "erosions," and pregnancies play significant parts, but all may be influenced in some subtle way by that variable factor which we term "heredity."

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SYMPTOMATOLOGY AND DIAGNOSIS OF CERVIX UTERI

GEORGE S. SHARP, M. D. (605 Professional Building, Pasadena).—The diagnosis of early cancer of the cervix is made most frequently during a routine complete physical examination for complaints that are not always related to uterine dysfunction. The earliest diagnoses are not accidental, but these symptomless growths may be found during thorough routine or periodic health examinations. For lack of definite initial symptomatology early cancer diagnosis may at first glance be credited to lucky stumbling, but the lucky clinician stumbles on forethought.

It is strange that a disease which was well known to the ancients should be so insidious in its etiology that we still are entirely ignorant as to its mode of onset in early symptomatology and diagnosis. Early internal cancers are only recognized after the exhaustion of all our inherent and applied art, while external cancers are discovered for the most part by the patient and confirmed by the physician. Our duty to the patient seeking medical attention should be a complete physical examination, regardless of apparent complaints.

The symptomatology of cancer of the cervix may be found in all textbooks, but the early cases do not have symptoms referable to the cervix. The normal functions of the uterus are not interrupted. The early growth many times in the form of a nodule is symptomless. A watery discharge or leukorrhea is not typical, but should always be thoroughly investigated. Intermenstral spotting, bleeding at intercourse or sudden hemorrhage are in most instances due to a growth which has ulcerated. Bleeding means the cancer is in direct contact with the blood stream and lymphatics; the possibility of metastases is great and is assured in 70 per cent of patients. Cervical growths may, therefore, be discovered before irregular bleeding, if suspected and examined.

The complaint common to all patients with an early growth is easy fatigue, poor appetite and possibly a little loss of weight. Our duty to the patient is neglected if these general symptoms are not followed up by a complete physical examination. More commonly these general complaints are tolerated by the patient for several months until local symptoms present.

Cancer rarely begins as cancer, but it is usually preceded by a persistent benign condition or chronic irritation. Recognition of these precancerous lesions such as leukoplakia, chronic endocervicitis and lacerations are of the utmost value to the patient, and proper treatment at that time will save the patient a probable malignant growth later. For example, a thorough cauterization for chronic cervicitis is a fair assurance of risk from subsequent malignancy in that area. Likewise cervical polyps should be removed because of their irritation to the mucous membrane in the canal.

The gross appearance of early cancer of the cervix is not typical. In fact, it is difficult to distinguish chronic cystic or interstitial cervicitis with erosion from early infiltrating epidermoid cancer with ulceration. Erosions are more frequently encountered in younger women from irritating discharges. In women over forty, erosions are less frequent, and when observed they should be regarded seriously, for many are actually early cancer. In this older group cystic formation and an increase in connective tissue production are observed more often than erosions. Moreover, mucus forms a large part of the discharge from these benign lesions, and this mucoid discharge is rarely present with cancer.

The appearance of an erosion should immediately arouse suspicion and be regarded as malignant until proven otherwise. If the area is touched with a swab, or slight bleeding is observed during the examination, this is still further evidence for definite pathological confirmation. The Schiller Test may be tried for further confirmatory evidence of biopsy. Lugol's solution is applied to the cervix and the normal squamous epithelium absorbs the iodin uniformly, while the ulcerated area remains unchanged. The test is not specific for new growth, and in the case of eversion with columnar epithelium presenting, the stain is not absorbed by this type of epithelium in the canal. The test is of no value for adenocarcinoma, although this type of growth is relatively rare, occurring only in 2 per cent of cervical growths. In other words, this test is not conclusive and is not dependable for a final diagnosis.

Little aid is obtained from palpation or bimanual examination in the early cancer. The typical induration of infiltrating growth may be readily found later during the progress of the disease, and the degree of extension into the broad ligaments may be determined. This evidence is necessary to clarify the clinical group; but the early diagnosis should be made before a degree of fixation is present.

The typical, or more commonly observed cancer of the cervix, is larger, nodular and more irregular than normal. There is usually an asymmetry with the location of the external os. This irregularity is due to tumor growth with invasion of surrounding normal tissues, and to a lesser extent the connective tissue and inflammatory

reaction around the growth. Ulceration, if present, is usually near the external os, and in the early case may even be demonstrated in an old laceration. Occasionally the growth may present in the cervical canal, and this demonstration may be helped by an applicator to incite bleeding, or to outline an irregularity of the wall. Rarely cancer may develop on the outer or lateral surface of the cervix near one of the fornices. Also more commonly than otherwise, the cervix is drawn slightly to one side, which suggests a degree of metastasis.

Early clinical diagnosis of cancer is largely a speculative one, but all important in inciting the physician to perform a biopsy. Microscopic study is the only basis for our final decision, and it should correspond with the clinical impression. In other words a negative pathological report of malignancy may mean that the biopsy specimen was taken from the inflammatory, reactionary zone around the growth, and the true structure missed; or the specimen may be taken from the top of a papillary type of growth, and a report of papilloma given when the infiltrating basal portion was missed. Even in the actual growth itself, the microscopic finding may vary as to the degree of malignancy.

The site and method of biopsy is obvious for the ulcerated growth. Any type of biopsy forceps is adequate and the specimen may be taken from the denuded area without anesthesia. The suspicious erosion requires a forceps with a cutting tip or, even better, a triangular wedge of tissue removed with a bipolar cutting current. The nonulcerated nodule also should be treated in a similar manner. This procedure is best performed in the hospital where an immediate frozen section may be done. If malignant, radium may be applied immediately without loss of valuable time.

The dangers of biopsy are no longer as apparent as they were once considered by many. The possibility of growth stimulation, dissemination of disease or infection are not found to be risks, and the data obtained is invaluable.

In conclusion, we are confronted with a disease without early local symptomatology, and our only weapons are: (1) Thorough, complete physical examinations on all patients; (2) yearly periodic follow-up examinations; (3) microscopic study of all suspicious erosions and interstitial cervical growths, and (4) adequate treatment of precancerous lesions before malignant degeneration.

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IRRADIATION IN THE TREATMENT OF CANCER OF THE CERVIX UTERI

ROBERT S. STONE, M. D. (University of California Hospital, San Francisco).—Cancer of the uterine cervix is such a common disease that almost every general practitioner is sure to have many cases in the course of his practice. The diagnosis of the condition has already been considered in this symposium. Once the diagnosis has been established, the physician in charge must advise the method of treatment. The skill and equipment necessary for proper therapy have become so exacting and elaborate that it usually must be carried out by specialists.

Since the discovery of the roentgen rays and radium, it has been found that cancer of the cervix is sufficiently sensitive to irradiation to make this method the treatment of choice. In a few carefully selected cases very radical surgery offers the best chance of a permanent cure, if performed by a skillful gynecologist. For the great majority of cases, however, the only treatment offering good results is irradiation.

The type of irradiation to be used is the next problem. It has been said very frequently that the cervix offers an ideal situation for the use of radium, because it is so accessible. This statement reveals a lack of knowledge, both of the physics of radiation and of the extent of the growth in most cases. The strength of gamma rays from radium decreases very rapidly as the distance from the source increases. Thus, if radium is placed in the uterine cavity and the cervical canal, it can deliver a dose sufficient to destroy cancer cells on and near the surface. If, however, a similar dose is to be delivered to cells that have spread to the adjoining tissues, there will be destruction of normal, as well as pathological cells close to the source of radiation. The deep effect of the radium can be increased by using heavy filtration, and by surrounding the applicator with rubber or other substances which increase the distance between the source of radiation and the first layers of tissue. The size of the canal, however, precludes the use of any great distance.

The effect on the cervix can also be increased by cross-firing with radium placed in the vaginal fornices. The effect of this cross-firing of gamma rays can be obtained only in the cervix itself, since the radium cannot be placed out in the broad ligament.

Fortunately, a cross-firing effect in the adjacent tissues can be attained by the external application of x-rays. The intensity of the radiation reaching the tissues diminishes from the surface downward. Hence, by a judicious combination of x-rays from the outside and radium from the inside, a fairly uniform radiation of the entire pelvis can be attained.

In using radium or radon, many factors have to be considered. First, let us think of the filters to be used. Filters are those substances which are placed between the source of the radiation and the tissue to be irradiated. They are used to stop the rays that penetrate poorly. The gamma rays are the only ones desired, and even the long gamma rays are not useful. The shorter the rays are, the more deeply they penetrate. Heavy metals, such as lead, platinum, or gold, are the best because a thinner layer cuts out the rays that are not wanted. Different radium therapists use different metals of varying thickness. It is not possible, therefore, to state any ideal dogmatically. As the gamma rays go through the metal, they create secondary radiations which have long wavelengths and, therefore, no penetrating power.

These must be stopped by a lighter metal such as aluminum, or by rubber.

The second factor to be considered is the fact that the greater the distance between the primary source of the radiation and the tissue, the greater is the depth of effective penetration of the rays. Hence, wherever possible, some light material such as cork should be used to separate the radium from the surface.

The third factor is the distribution of the radium over the surface. It is this element of the problem, as much as any other, that makes every case different from every other. To achieve the best result, the radium should be well distributed over the surface. If the growth is large and the cervical canal patent, the radium can be widely distributed, and more will be required to cover the whole growth. Hence the distribution of the dosage between the body of the uterus, the cervical canal, and the vaginal surfaces is very important.

In stating the dosage of radium, it is far from sufficient to say that a given number of milligram or millicurrie hours has been or is to be used. The intensity of the radiation reaching each part of the tumor is the important factor. This is best stated by giving the total strength of the source of radiation, plus the filter, plus the distance, plus the distribution.

An additional factor of great importance is the rate of irradiation. The radiation must act over a certain period of time. It has been found that a massive dose completed in a short time is not so effective as the same total dosage given over a long period. The optimum distribution in time is not yet known. Some radiologists give three treatments of some hours each, at weekly intervals; others give the dosage by continuous application for a week or more; there are, in addition, many intermediate techniques.

Surgeons discovered, many years ago, that it was useless to remove cancer by a narrow resection of the original growth. A wide excision, including the usual channels of spread of the growth, is needed. Radium applied to the cervix is equivalent to a local excision. X-rays of the most penetrating type available must be used, in addition, to cover the usual channels of spread—the parametrium and the lymphatics of the pelvis. The penetrating power of x-rays is determined by the voltage of the electric current used to produce them. If the voltage is below 150 kilovolts, the x-rays will have such a low penetrating power that the radiation reaching the depth of the pelvis will be useless. Two hundred kilovolt x-rays, if used properly, can radiate the pelvis fairly effectively. On theoretical grounds, higher voltages should give more thorough irradiation. For this reason the experiments now being tried with voltages up to 900 kilovolts are being watched with great interest.

The intensity of the x-rays decreases rapidly as greater depths are reached, and to increase the depth dosage, cross-firing is used. X-rays are directed from the front, from the back and from both sides. Some roentgenologists use two portals of entry from the front and two from the back. The number of portals are varied according to the size of the patients' pelves.

As with radium, the filtration plays an important part in cutting out those rays of low penetrating power which will affect the skin, but not the deeper tissues. Copper, zinc and tin of varying thicknesses are used, with aluminum to cut out the secondary rays. With the higher voltages, lead is being used as a filter. Distance is also of importance in x-ray therapy, and no distance less than 50 centimeters should be used.

The factor of time is also of great significance. In the early days of x-ray therapy, massive doses were given in a short time. This method was found to have a profound influence on the patient, but comparatively little on the tumor. The tendency at present is to prolong the treatment by fractionating it, giving a little every day. Initially the prolongation of treatments arose from an attempt to radiate each cell as it came to its mitotic state, at which time it is most sensitive. Another reason of equal importance lies in the fact that the normal tissues recover from the effect of radiation more rapidly than the tumor cells. Hence, a larger dose can be delivered to the tumor with less damage to the normal tissues by spacing the dosage. The ideal duration of the course of irradiation has not yet been found, but it is generally accepted that the time for a course of therapy should not be less than two weeks. Many roentgenologists prolong the treatments for three or four weeks, and some continue them for two months or more. As a rule, the treatments are given daily.

The limiting factor in applying x-ray is the ability of the skin, and of the mucous membrane of the bladder and intestines, to withstand the dosage. With the prolonged (protracted) fractionated method, the skin can be reddened, browned or even blistered, and yet return to its normal state. With such a dose the mucous membranes become so inflamed as to produce cystitis and colitis. These changes cause very disagreeable symptoms which can be controlled only partially by medication.

A further problem in connection with radiation is the order in which the treatments should be given. The x-ray therapy should block the lymphatic channels and shrink the tumor. Hence, it is easier and safer to apply the radium after the x-ray treatments have been completed.

While the radiation must be given by specially trained physicians, the general practitioner often has to observe the patient during the course of treatments and should know what to expect. X-ray treatments to the pelvis usually produce the so-called x-ray sickness. The mildest symptom is a loss of appetite. The next is nausea, which may progress to vomiting. The patient generally feels more or less fatigued and somewhat melancholy. There is no known specific treatment for these symptoms. The patient must be encouraged to eat such foods as appeal to her, to keep up her strength.

Between the second and third weeks of treatment, the patient usually complains of diarrhea and often of pain on urination. These symptoms usually last about one week, and can be controlled partially by tincture of opium or paregoric.

From three to four weeks after starting treatments, the skin over the treated areas becomes sore. It should become red or reddish-brown, and any hair in the area affected by treatment should fall out. There may be some blistering of the skin. It is very important that no irritating medication or hot applications should be used on the areas of treatment. The roentgenologist usually prescribes some soothing powder, such as zinc sterate. The serious reaction lasts about a week, but a tanning may persist for some months.

The treatments should not be interrupted. A course of treatments is planned, with the definite purpose in view of getting a certain total dose given in a given period of time, by applying definite fractions of the total each day. Any interruption changes the whole course. It is better to hospitalize the patient, if necessary, to prevent such interruption.

It must always be borne in mind that it is the first course of treatments that cures or fails to cure the patient. Subsequent treatments are palliative. The tumor never reacts as favorably as it does during the first course. The first treatments must be as radical as the most radical surgery, and the patient needs to be encouraged frequently. It is altogether too common a practice for referring physicians to discontinue treatments temporarily without consulting the radiation therapist, and thereby jeopardize the patient's chances of a cure.

From the foregoing discussion it is obvious that the application of radium and x-ray involves much more than the giving of so many milligram hours of radium and so many units of x-ray. Anyone who is to apply these penetrating agents must have special training in the physics and biophysics involved, and must have a keen clinical training in the reaction of tumors. X-rays and radium must be regarded as physical agents more penetrating than the scalpel.

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SURGICAL TREATMENT OF CARCINOMA OF THE UTERINE CERVIX

VERNE C. HUNT, M. D. (555 Roosevelt Building, Los Angeles).—Even though the diagnosis of carcinoma of the uterine cervix has been discussed previously, it is essential in the consideration of therapeutic measures that one should state his ideas regarding diagnostic methods, their reliability, and their usefulness in finally determining the type of treatment suitable in any particular case.

At the outset, it may be stated that in extensive malignant lesions of the cervix, the diagnosis is readily suggested by palpation and upon inspection; the biopsy is usually of value as corroborative evidence. In the early cases in which the clinical and objective manifestations are insufficient, microscopic examination of tissue provides the only accurate method of making a positive diagnosis. The iodin reaction of the cervical epithelium, known as the Schiller test, has in recent years served as a distinct aid in the early diagnosis of carcinoma of the uterine cervix. The test is dependent upon the normal glycogen content of the cells of the normal surface epithelium of the cervix, which it stains a deep mahogany brown. Any abnormality in the surface epithelium prevents the absorption of iodin, which definitely demarcates the normal epithelium from the abnormal. In the early application of this test it was interpreted, and accepted by many, as specific for the recognition of early malignant disease. Early malignant disease is usually definitely demarcated from the normal cervical epithelium after the application of Lugol's solution; but lack of absorption of the iodin does not necessarily indicate that malignant disease is present. It is now well known that in leukoplakia of the cervix, superficial ulceration, traumatic disquamation of surface epithelium and other abnormalities, absorption of iodin fails to occur and should not lead one abruptly to the conclusion that early malignant disease exists. The chief value of the Schiller test is the demarcation of normal from abnormal epithelium as an aid in the determination of the extensiveness of the disease as it involves the cervix, and to indicate the areas from which tissue shall be removed for biopsy. In the last analysis the diagnosis of early carcinoma of the uterine cervix is dependent upon competent microscopic examination of tissue representative of the lesion.

Prophylactic Surgery.—Surgical treatment of carcinoma of the cervix may be considered as prophylactic or preventive, and direct. The frequency with which malignant disease of the uterus is encountered makes it incumbent upon the physician to institute thorough investigation of the female pelvis, when clinical manifestations deviate from the normal. While carcinoma of the uterine cervix may occur at any adult age, it is worthy of emphasis that the age of highest incidence is during the fifth and sixth decades of life, coincident with menopausal manifestations; that it occurs most frequently in women who have borne children, and that certain endocervical lesions frequently antedate the development of carcinoma. The surgical repair of cervical lacerations, the thorough surgical eradication of benign ulcerating lesions of the cervix and all other endocervical abnormalities materially reduce the likelihood of carcinoma developing in this situation. Likewise the performance of vaginal hysterectomy for uterine prolapsus, with or without cervical ulceration at or about or beyond age of menopause, instead of the conservative intra-abdominal fixation or suspension types of procedures, is worthy of due consideration as regards prophylactic surgical procedures.

Considerable question exists, and much controversy has arisen regarding the frequency with which carcinoma develops in the remaining cervix following subtotal, abdominal hysterectomy for benign disease in the uterus. It is noteworthy that

carcinoma of the remaining cervix actually does occur, but the exact incidence is unknown. Polak has estimated the frequency of such occurrence at 2 per cent, which is higher than the usual estimate. At any rate, the incidence is sufficiently great to raise the question of total versus subtotal hysterectomy for benign disease of the uterus. A number of reports to the contrary notwithstanding, little question exists that in general the risk and mortality rate of total abdominal hysterectomy exceeds that of subtotal hysterectomy. In the hands of the experienced surgeon this difference is not great. Nevertheless, when indications exist for abdominal hysterectomy for benign disease, the condition of the cervix should determine whether the procedure shall be a subtotal hysterectomy or a total operation with complete removal of the cervix. Objection to total abdominal hysterectomy is sustained in some quarters by the possibility that prolapsus of the vagina and cystocele develop, but such sequelae are readily obviated through the proper fixation of the round and broad ligaments to the vaginal vault. It is needless to say that, in the presence of a normal cervix in a nulliparous woman, the subtotal procedure is entirely justifiable. Also, in the presence of obesity or other associated conditions, in which the simplest type of procedure is advisable, the subtotal hysterectomy may be the most practical procedure for both the patient and the surgeon. Whenever a subtotal abdominal hysterectomy is resorted to in the presence of ancient laceration of the cervix, or other cervical precursors of cancer, vaginal removal of the remaining cervix is incumbent upon the surgeon to the best interests of the patient. The variability of risk and mortality rate between subtotal and total abdominal hysterectomy is so dependent upon many factors that surgical judgment must be relied upon to determine the selection of cases for one or the other procedure. Unfortunately, when carcinoma develops in the remaining cervix after subtotal hysterectomy, the diagnosis usually is not made until the disease is far advanced; and although treatment may prolong life, cure is rarely attained. As a practical consideration, it may be stated that in few women in whom the indications are clear for hysterectomy for benign pelvic disease, is the cervix normal or in good condition and worthy of preservation with impunity. When one gives due consideration to the limited curability of carcinoma of the cervix by surgical procedures or physical agents, the prophylactic removal of the cervix by total hysterectomy for benign uterine disease must strongly become commended as the procedure of choice over subtotal hysterectomy in the absence of contraindications. Likewise, when one dwells upon the potentialities of the remaining cervix, one becomes impressed with the necessity of the surgeon mastering a technique for total abdominal hysterectomy, which entails a low mortality rate comparable to that of the subtotal operation when properly performed, even though infection of the cervix exists.

Direct Surgery.—Carcinoma of the uterine cervix is usually far advanced when opportunity is afforded the institution of treatment, and the consequent curability of the disease is not high. Dr. Frederick V. Emmert of St. Louis recently presented rather startling reasons, obtained through interviews, of a group of patients for the delay in the institution of treatment. One-half of the patients claimed that they had been under the care of a physician for periods of time ranging from two months to one and one-half years, during which time the signs of early malignancy were not recognized. One-fourth of the patients interviewed confessed that their delay in treatment had been due entirely to their own negligence. All of these patients attributed their symptoms to the change of life. One-eighth of the patients consulted a physician early in their illness and were carefully examined. Definite treatment was recommended, but they were afraid to undergo it. In the remaining eighth of the patients immediate recognition of the disease was followed by immediate treatment, and in this group cure was attained in nearly 50 per cent of the cases.

From the surgical standpoint, the operability of carcinoma of the cervix is low, and at best does not exceed 20 to 25 per cent of the cases. Operability is relative only, and is dependent upon the personal equation in the interpretation of operability. Certainly operability has decreased in recent years through more closely drawing the lines between those cases that are truly inoperable, those that are questionably operable, and those that are operable in the strictest sense. Previous to the era of physical agents in the treatment of malignant disease, many patients were operated upon who today would be considered questionably operable or inoperable. With the facilities available for the competent application and utilization of the physical agents, the questionably operable carcinoma cases should seldom, if ever, be operated upon. The doubt about the questionably operable case is based upon extension beyond the cervix. Through a more or less definitely agreed upon classification, the truly operable carcinoma of the cervix is one in which the disease is confined as nearly as can be determined to the cervical canal or vaginal face of the cervix, and this type of lesion is the only one in which surgical treatment may be justifiably considered. There are many who in their hyperenthusiasm are only too ready to treat all patients with carcinoma of the cervix by nonsurgical methods or the physical agents. The utilization of the physical agents has accomplished much in palliation and cure of carcinoma in this situation, but it is worthy of emphasis that an operable lesion is best treated by total hysterectomy. Comparison of results achieved through surgical procedures, and those obtained by the use of the physical agents in the treatment of carcinoma in this situation, are not made readily with accuracy. It is worthy of note that the results of treatment by the physical agents, even though reckoned on many inoperable and questionably operable cases, have been altered by strictly operable cases, as the results of the surgical procedures have been altered by questionably operable and subsequently proven inoperable cases.

It is not within the province here to engage in the discussion of the relative merits of surgical procedures and physical agents in the treatment of carcinoma of the cervix. There is little to suggest that the physical agents may justly supersede or replace surgical procedures in the treatment of early or strictly operable carcinoma of the cervix. One should not be unmindful of associated pathology in the uterine fundus and in the adnexa to complicate the problem of treatment by one method or the other, and alter the indications for one or the other method. The selection of cases for surgical treatment is a matter in which the personal equation, not only in terms of interpretation of operability, but the skill with which the surgical procedure may be executed, is intimately concerned. The problem of treatment not always readily resolves itself into the choice of one method or another, but may advantageously resolve itself into the use of all methods. It may be stated, however, that most cases immediately divide themselves into the operable and inoperable groups. The inoperable cases seldom become surgical, for seldom are surgical procedures advantageously employed after the application of physical agents. However, the physical agents at times may be advantageously employed following the surgical procedure.

Various surgical procedures have in the past been instituted for the eradication of carcinoma of the cervix, a discussion of which is not here in order. Today direct surgery of carcinoma of the cervix is limited entirely to the cases in which the lesion is confined to the cervical canal or the vaginal face of the cervix, without demonstrable extension to the vaginal mucous membrane, without palpable invasion of the structures outside the uterus, and without demonstrable fixation of the pelvic organs, or evidence of remote metastases. To this strictly operable type of lesion the operation of total abdominal hysterectomy in the high lying uterus or vaginal hysterectomy, in the presence of pelvic relaxation, may be advantageously instituted with no greater risk, in competent hands, than the same procedures for benign disease of the uterus, and afford excellent prospects of cure.

In the last analysis, the operability of carcinoma of the cervix in the future is in the hands of the man engaged in bedside medicine; and to him the patient must look for early diagnosis and finally the proper recommendations in treatment.

Traumatism of Skull and Brain.—Jentzer discusses the effect of operation in cranial traumatisms based on the records of 837 cases from 1914 to 1934. There were 366 patients with cerebral contusion who recovered under nonoperative treatment. Seven died in spite of conservative treatment and two in spite of operative intervention. Two hundred and thirty-three patients with cranial fracture recovered under conservative treatment, thirty-nine with fracture recovered after operation, thirty-five died in spite of operation, and seventy-three died without operation. There were eighty-two cases of fracture which could not be used for various reasons. From the study of these cases he concludes that the anamnesis can never be sufficiently complete to dictate the therapeutic procedure. In more than 50 per cent of the fractures, some of a severe character, such as slow pulse and hyperpyrexia, recovery occurred without intervention. Indications for operation are given by the succession of physiopathologic phenomena rather than by any one set of signs. In the severe cases, immediate operation is indicated. This is based on the enormous anatomic lesions observed in 117 necropsies. Such lesions could not be expected to heal without surgical help. In some, microscopic traumatisms develop toward neurologic sclerosis. The changes in the choroid plexus, the different effects of hemorrhage, the sympathetic disorders (congestion, edema, anemia) and the silent lesions might all be helped by early trephining. The author concludes that death is not produced by lesions of the hemispheres alone, of the protuberance, of the peduncle or of the bulb and by hemorrhages, but that cerebral edema, pulmonary lesions and emboli are common fatal complications.—*Journal de Chirurgie.*

Law to Check Abuse of Public Hospital Service.—One of the members of the French chamber of deputies has introduced a bill to prevent further admissions to the public (free) hospitals of those who are able to pay. During the last few years the public hospitals have been overcrowded. Many persons whose means permitted them to enter private hospitals have been admitted because they wished to be under the care of medical men who are chosen on a competitive basis and who represent the leaders of the profession. The public hospital authorities have admitted many who should have been cared for elsewhere because the hospital budgets were greatly reduced. The medical profession has protested in vain thus far; hence this law will prevent abuse of the privilege to enter free hospitals. A committee will be appointed in each department of France. A representative of the administration and two physicians will constitute the personnel of the committee. Only emergency cases and persons who are proved to be indigent or temporarily without resources will be admitted if this bill becomes a law. After investigation of the individual applicant, a card, valid for six months, will be issued to those who are eligible to enter the free hospitals. The deputy in presenting the bill stated that "everything possible must be done to lighten the burden of a profession that has suffered so intensely and yet has remained faithful to its ideal of helping suffering mankind."—*Journal of the American Medical Association.*

Irritants in Adhesive Plaster.—Schwartz and Peck tested twenty-one subjects showing various degrees of adhesive plaster reaction with eleven ingredients of adhesive plaster. One of these developed a generalized reaction, so that individual tests could not be evaluated. Seven of the remaining twenty were negative to the patch tests. Of the thirteen remaining, eight showed positive reactions to wood rosin extracted from the stumps of pine trees; eight to so-called Burgundy pitch; six to I-rosin; five to South American Para rubber, which had been milled, washed and dried; two to beeswax; two to olibanum, and one each to hydrous wool fat, orris root and gutta siac. All the subjects who showed marked reactions at the first removal of the adhesive tape with continued intensification at the second inspection showed positive reactions to one or more of the rosins, and 50 per cent were sensitive to rubber. Seven of the subjects tested who showed a negative or only a slight erythema at the first inspection, but who later developed delayed reactions, were sensitive to one or more of the rosins, and two were sensitive to rubber. The tests seemed to indicate that there are two types of reactions to adhesive tape: one is purely chemical and due to resultant maceration and mechanical trauma from the application and the removal of the plaster, and the other is due to hypersensitivity to one or more of the ingredients of the plaster. The results indicate that the chief irritants in the adhesive plasters that were tested are the rosins, in which can be included the so-called Burgundy pitch and the smoke-cured wild rubber, of which South American Para is an example. An attempt was made to determine whether complexion or previous diseases of the skin or an allergic diathesis had a predisposing effect on sensitivity to adhesive plaster. All the subjects patch tested with adhesive plaster were questioned as to these facts. No such correlation could be established.—*United States Public Health Reports.*